



## TFT LCD Approval Specification

# MODEL NO.: V400H1 - PH2

Customer: \_\_\_\_\_

Approved by: \_\_\_\_\_

Note:

Approved By	TVHD	
	CC Chung	

Reviewed By	QA Dept.	Product Development Div.
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**REVISION HISTORY**

Version	Date	Page (New)	Section	Description
Ver 2.0	Nov. 19,'09	All	All	Tentative Specification was first issued.

## 1. GENERAL DESCRIPTION

### 1.1 OVERVIEW

V400H1-PH2 is a 40" TFT Liquid Crystal Display cell with driver ICs and 4ch-LVDS interface. This product supports 1920 x 1080 Full HDTV format and can display 1.07G colors (8-bit+Hi-FRC/color). The backlight unit is not built-in.

### 1.2 CHARACTERISTICS

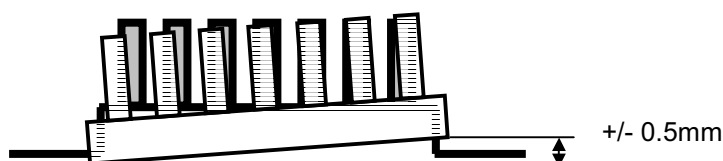
CHARACTERISTICS ITEMS	SPECIFICATIONS
Screen Diagonal [in]	40
Pixels [lines]	1920 x 1080
Active Area [mm]	885.6(H) x 498.15 (V) (40" diagonal)
Sub -Pixel Pitch [mm]	0.15375 (H) x 0.46125 (V)
Pixel Arrangement	RGB vertical stripe
Weight [g]	TYP. 1908
Physical Size [mm]	Reference 2D Drawing
Display Mode	Transmissive mode / Normally black
Contrast Ratio	6500:1 Typ. (Typical value measured at CMO's module)
Glass thickness (Array/CF) [mm]	0.7 / 0.7
Viewing Angle (CR>20)	+88/-88(H),+88/-88(V) Typ. (Typical value measured at CMO's module)
Color Chromaticity	R=(0.635, 0.323) G=(0.285, 0.602) B=(0.148, 0.056) W=(0.280, 0.290) (Typical value measured at CMO's module)
Cell Transparency [%]	4.6% Typ. (Typical value measured at CMO's module)
Polarizer (CF side)	Super Wide View Glare coating, 1030.18 (H) x 586.37(w).. Hardness: 3H
Polarizer (TFT side)	Super Wide View, 1030.18(H) x 586.37(w).

### 1.3 MECHANICAL SPECIFICATIONS

Item	Min.	Typ.	Max.	Unit	Note
Weight	2260	2560	2860	g	-
I/F connector mounting position	The mounting inclination of the connector makes the screen center within $\pm 0.5\text{mm}$ as the horizontal.				(2)

Note (1) Please refer to the attached drawings for more information of front and back outline dimensions.

(2) Connector mounting position





## 2. ABSOLUTE MAXIMUM RATINGS

### 2.1 ABSOLUTE RATINGS OF ENVIRONMENT (BASE ON CMO MODULE V400H1-LH9)

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Storage Temperature	TST	-20	+60	°C	(1)
Operating Ambient Temperature	TOP	0	50	°C	(1), (2)
Shock (Non-Operating)	SNOP	-	30	G	(3), (5)
Vibration (Non-Operating)	VNOP	-	1.0	G	(4), (5)

Note (1) Temperature and relative humidity range is shown in the figure below.

(a) 90 %RH Max. ( $T_a \leq 40^\circ\text{C}$ ).

(b) Wet-bulb temperature should be  $39^\circ\text{C}$  Max. ( $T_a > 40^\circ\text{C}$ ).

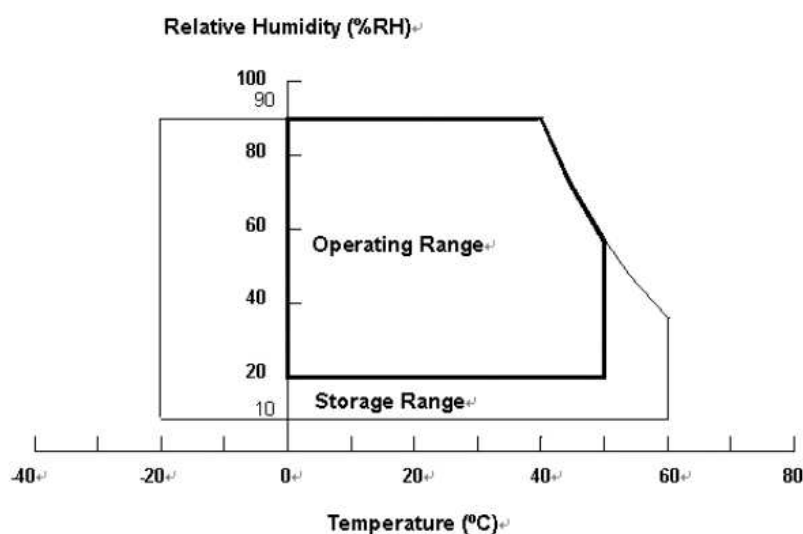
(c) No condensation.

Note (2) The maximum operating temperature is based on the test condition that the surface temperature of display area is less than or equal to  $65^\circ\text{C}$  with LCD module alone in a temperature controlled chamber. Thermal management should be considered in final product design to prevent the surface temperature of display area from being over  $65^\circ\text{C}$ . The range of operating temperature may degrade in case of improper thermal management in final product design.

Note (3) 11 ms, half sine wave, 1 time for  $\pm X$ ,  $\pm Y$ ,  $\pm Z$ .

Note (4) 10 ~ 200 Hz, 10 min, 1 time each X, Y, Z.

Note (5) At testing Vibration and Shock, the fixture in holding the module has to be hard and rigid enough so that the module would not be twisted or bent by the fixture.



## 2.2 PACKAGE STORAGE

Storage condition: With shipping package.

Storage temperature rang:  $25\pm 5^{\circ}\text{C}$

Storage humidity range:  $50\pm 10\%\text{RH}$

Shelf life: a month

## 2.3 ELECTRICAL ABSOLUTE RATINGS (OPEN CELL)

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Power Supply Voltage	VCC	-0.3	13.5	V	(1)
Logic Input Voltage	VIN	-0.3	3.6	V	

Note (1) Permanent damage to the device may occur if maximum values are exceeded. Function operation should be restricted to the conditions described under Normal Operating Conditions.

### 3. ELECTRICAL CHARACTERISTICS

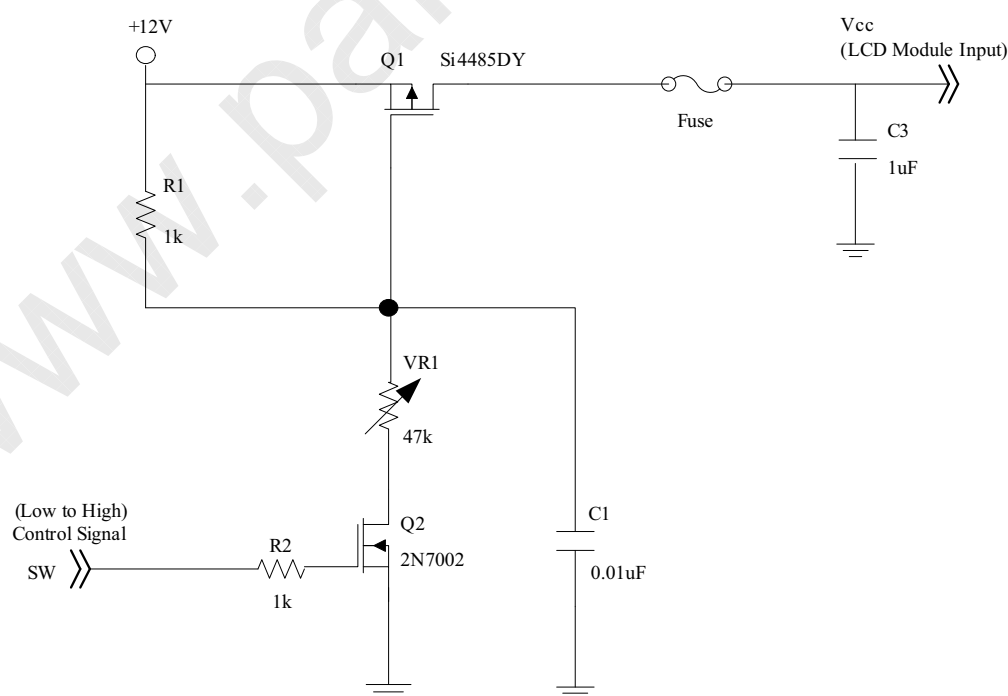
#### 3.1 TFT LCD OPEN CELL

(Ta = 25 ± 2 °C)

Parameter		Symbol	Value			Unit	Note
			Min.	Typ.	Max.		
Power Supply Voltage		V <sub>CC</sub>	10.8	12	13.2	V	(1)
Rush Current		I <sub>RUSH</sub>	-	-	4.84	A	(2)
Power Supply Current	White Pattern	-	-	0.97	-	A	(3)
	Horizontal Stripe	-	-	1.72	2.236	A	
	Black Pattern	-	-	0.44	-	A	
LVDS interface	Differential Input High Threshold Voltage	V <sub>LVTH</sub>	+100	-	-	mV	(4)
	Differential Input Low Threshold Voltage	V <sub>LVTL</sub>	-	-	-100	mV	
	Common Input Voltage	V <sub>CM</sub>	1.0	1.2	1.4	V	
	Differential input voltage	V <sub>ID</sub>	200	-	600	mV	
	Terminating Resistor	R <sub>T</sub>	-	100	-	ohm	
CMOS interface	Input High Threshold Voltage	V <sub>IH</sub>	2.7	-	3.3	V	
	Input Low Threshold Voltage	V <sub>IL</sub>	0	-	0.7	V	

Note (1) The module should be always operated within the above ranges.

Note (2) Measurement condition:

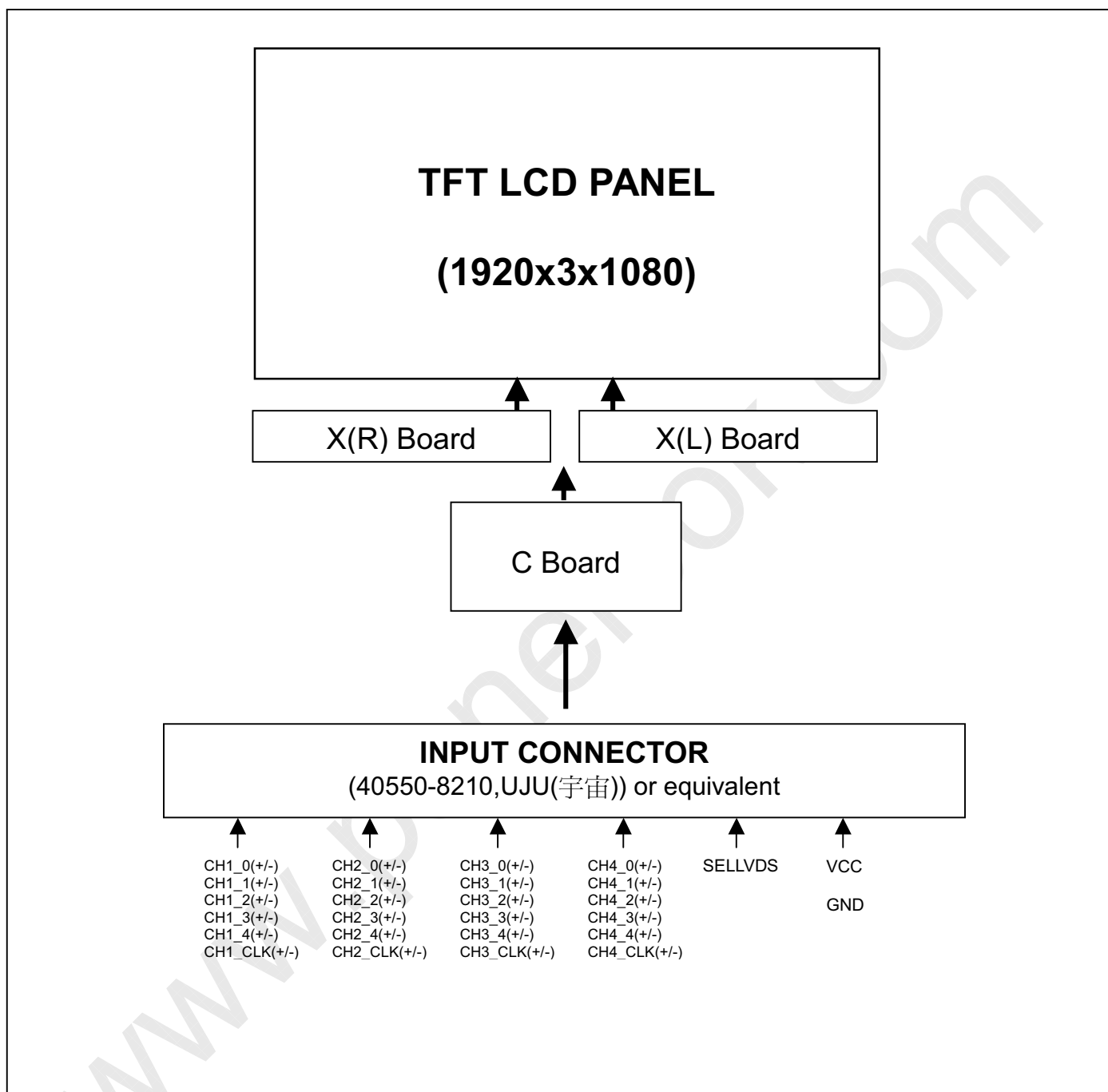






## 4. BLOCK DIAGRAM

### 4.1 TFT LCD OPEN CELL





## 5. INPUT TERMINAL PIN ASSIGNMENT

### 5.1 TFT LCD Module

CNF1 Connector Pin Assignment (40550-8210,UJU(宇宙) or equivalent)

Pin	Name	Description	Note
1	VCC	+12V power supply	
2	VCC	+12V power supply	
3	VCC	+12V power supply	
4	VCC	+12V power supply	
5	VCC	+12V power supply	
6	N.C.	No Connection	(1)
7	GND	Ground	
8	GND	Ground	
9	GND	Ground	
10	CH1[0]-	First pixel Negative LVDS differential data input. Pair 0	
11	CH1[0]+	First pixel Positive LVDS differential data input. Pair 0	
12	CH1[1]-	First pixel Negative LVDS differential data input. Pair 1	
13	CH1[1]+	First pixel Positive LVDS differential data input. Pair 1	
14	CH1[2]-	First pixel Negative LVDS differential data input. Pair 2	
15	CH1[2]+	First pixel Positive LVDS differential data input. Pair 2	
16	GND	Ground	
17	CH1CLK-	First pixel Negative LVDS differential clock input.	
18	CH1CLK+	First pixel Positive LVDS differential clock input.	
19	GND	Ground	
20	CH1[3]-	First pixel Negative LVDS differential data input. Pair 3	
21	CH1[3]+	First pixel Positive LVDS differential data input. Pair 3	
22	CH1[4]-	First pixel Negative LVDS differential data input. Pair 4	
23	CH1[4]+	First pixel Positive LVDS differential data input. Pair 4	
24	GND	Ground	
25	CH3[0]-	Third pixel Negative LVDS differential data input. Pair 0	
26	CH3[0]+	Third pixel Positive LVDS differential data input. Pair 0	
27	CH3[1]-	Third pixel Negative LVDS differential data input. Pair 1	
28	CH3[1]+	Third pixel Positive LVDS differential data input. Pair 1	
29	CH3[2]-	Third pixel Negative LVDS differential data input. Pair 2	
30	CH3[2]+	Third pixel Positive LVDS differential data input. Pair 2	
31	GND	Ground	
32	CH3CLK-	Third pixel Negative LVDS differential clock input.	
33	CH3CLK+	Third pixel Positive LVDS differential clock input.	



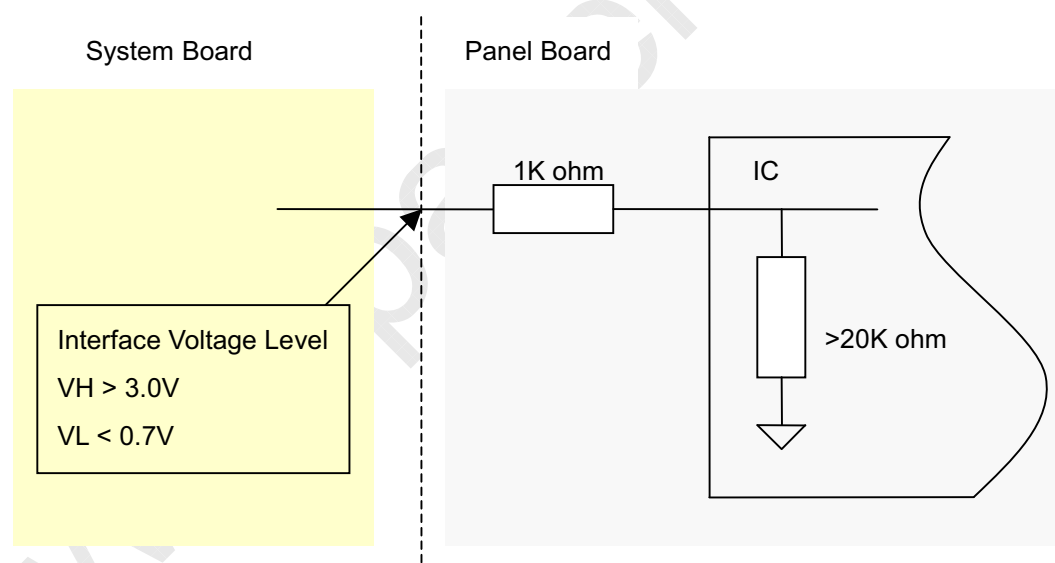
34	GND	Ground	
35	CH3[3]-	Third pixel Negative LVDS differential data input. Pair 3	
36	CH3[3]+	Third pixel Positive LVDS differential data input. Pair 3	
37	CH3[4]-	Third pixel Negative LVDS differential data input. Pair 4	
38	CH3[4]+	Third pixel Positive LVDS differential data input. Pair 4	
39	GND	Ground	
40	SCL	I2C Bus	
41	N.C.	No Connection	(1)
42	N.C.	No Connection	(1)
43	WP	Write Protection for EEPROM	
44	SDA	I2C Bus	
45	LVDS_SEL	LVDS Data Format Selection	(2)
46	N.C.	No Connection	(1)
47	N.C.	No Connection	(1)
48	N.C.	No Connection	(1)
49	N.C.	No Connection	(1)
50	N.C.	No Connection	(1)
51	N.C.	No Connection	(1)
52	GND	Ground	
53	CH4[4]+	Fourth pixel Positive LVDS differential data input. Pair 4	
54	CH4[4]-	Fourth pixel Negative LVDS differential data input. Pair 4	
55	CH4[3]+	Fourth pixel Positive LVDS differential data input. Pair 3	
56	CH4[3]-	Fourth pixel Negative LVDS differential data input. Pair 3	
57	GND	Ground	
58	CH4CLK+	Fourth pixel Positive LVDS differential clock input.	
59	CH4CLK-	Fourth pixel Negative LVDS differential clock input.	
60	GND	Ground	
61	CH4[2]+	Fourth pixel Positive LVDS differential data input. Pair 2	
62	CH4[2]-	Fourth pixel Negative LVDS differential data input. Pair 2	
63	CH4[1]+	Fourth pixel Positive LVDS differential data input. Pair 1	
64	CH4[1]-	Fourth pixel Negative LVDS differential data input. Pair 1	
65	CH4[0]+	Fourth pixel Positive LVDS differential data input. Pair 0	
66	CH4[0]-	Fourth pixel Negative LVDS differential data input. Pair 0	
67	GND	Ground	
68	CH2[4]+	Second pixel Positive LVDS differential data input. Pair 4	
69	CH2[4]-	Second pixel Negative LVDS differential data input. Pair 4	

70	CH2[3]+	Second pixel Positive LVDS differential data input. Pair 3	
71	CH2[3]-	Second pixel Negative LVDS differential data input. Pair 3	
72	GND	Ground	
73	CH2CLK+	Second pixel Positive LVDS differential clock input.	
74	CH2CLK-	Second pixel Negative LVDS differential clock input.	
75	GND	Ground	
76	CH2[2]+	Second pixel Positive LVDS differential data input. Pair 2	
77	CH2[2]-	Second pixel Negative LVDS differential data input. Pair 2	
78	CH2[1]+	Second pixel Positive LVDS differential data input. Pair 1	
79	CH2[1]-	Second pixel Negative LVDS differential data input. Pair 1	
80	CH2[0]+	Second pixel Positive LVDS differential data input. Pair 0	
81	CH2[0]-	Second pixel Negative LVDS differential data input. Pair 0	
82	GND	Ground	

Note (1) Reserved for internal use. Please leave it open.

Note (2) High=connect to +3.3V or Open : VESA Format ; Low= connect to GND : JEIDA Format.

Note (3) Interface optional pin has internal scheme as following diagram. Customer should keep the interface voltage level requirement as below.



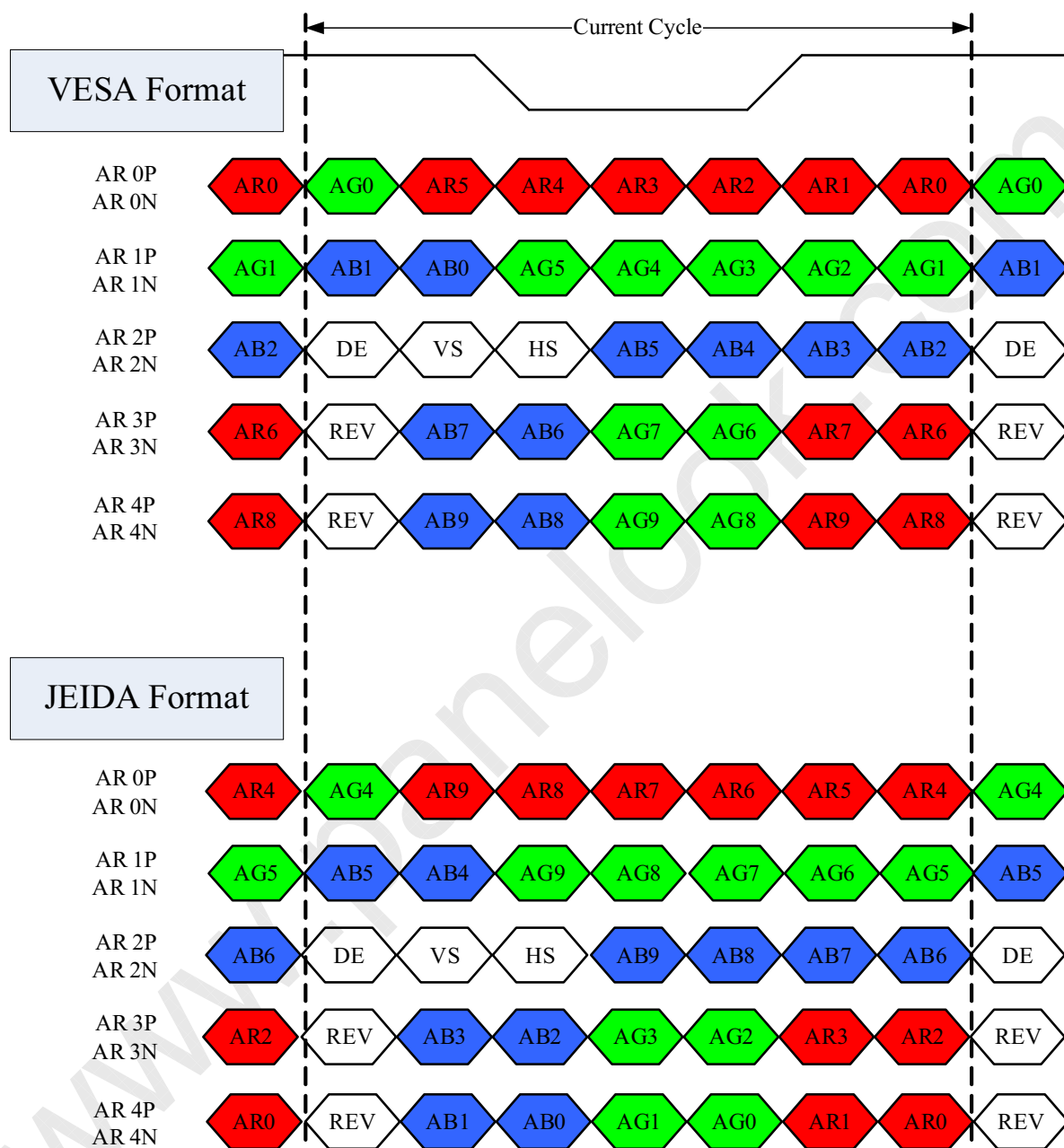
Note (4) LVDS 4-port Data Mapping

Port	Channel of LVDS	Data Stream
1st Port	First Pixel	1, 5, 9, .....1913, 1917
2nd Port	Second Pixel	2, 6, 10, ....1914, 1918
3rd Port	Third Pixel	3, 7, 11, ....1915, 1919
4th Port	Fourth Pixel	4, 8, 12, ....1916, 1920

## 5.2 LVDS INTERFACE

VESA Format : SELLVDS = H or Open

JEIDA Format : SELLVDS = L



AR0~AR9: First Pixel R Data (9; MSB, 0; LSB)

AG0~AG9: First Pixel G Data (9; MSB, 0; LSB)

AB0~AB9: First Pixel B Data (9; MSB, 0; LSB)

DE: Data enable signal

DCLK: Data clock signal

RSV: Reserved

### 5.3 COLOR DATA INPUT ASSIGNMENT

The brightness of each primary color (red, green and blue) is based on the 10-bit gray scale data input for the color. The higher the binary input, the brighter the color. The table below provides the assignment of color versus data input.

Color		Data Signal																													
		Red										Green										Blue									
		R9	R8	R7	R6	R5	R4	R3	R2	R1	R0	G9	G8	G7	G6	G5	G4	G3	G2	G1	G0	B9	B8	B7	B6	B5	B4	B3	B2	B1	B0
Basic Colors	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Green	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0
	Blue	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1
	Cyan	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Magenta	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1
	Yellow	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0
	White	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gray Scale Of Red	Red (0) / Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red (1)	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red (2)	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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	Red (1021)	1	1	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red (1022)	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red (1023)	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Scale Of Green	Green (0) / Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Green (1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	Green (2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
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	Green (1021)	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0
	Green (1022)	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	Green (1023)	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
Gray Scale Of Blue	Blue (0) / Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Blue (1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	Blue (2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
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	Blue (1021)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	1
	Blue (1022)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	0
	Blue (1023)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1

Note (1) 0: Low Level Voltage, 1: High Level Voltage

## 6. INTERFACE TIMING

### 6.1 INPUT SIGNAL TIMING SPECIFICATIONS

The input signal timing specifications are shown as the following table and timing diagram.

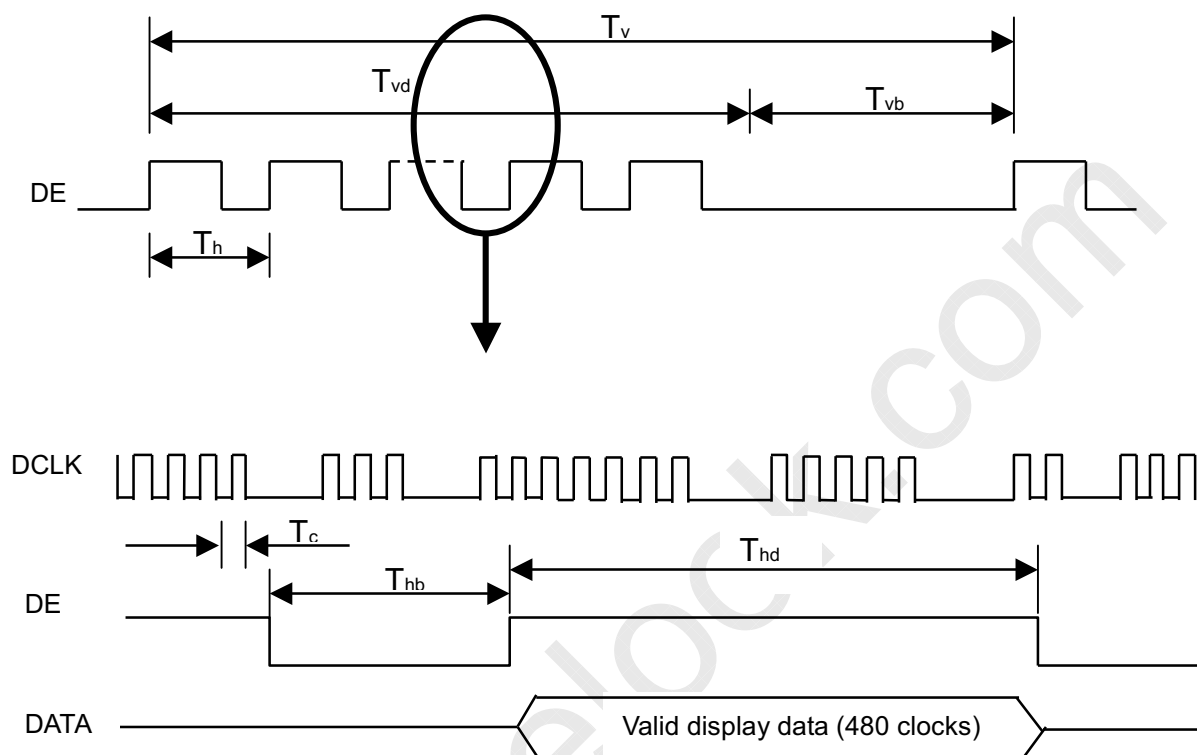
Signal	Item	Symbol	Min.	Typ.	Max.	Unit	Note
LVDS Receiver Clock	Frequency	$F_{clkin}$ (=1/TC)	60	74.25	80	MHz	
	Input cycle to cycle jitter	$T_{rcl}$	-	-	200	ps	(3)
	Spread spectrum modulation range	$F_{clkin\_mod}$	$F_{clkin}-2\%$	-	$F_{clkin}+2\%$	MHz	(4)
	Spread spectrum modulation frequency	$F_{SSM}$	-	-	200	KHz	
LVDS Receiver Data	Setup Time	$T_{lvsu}$	600	-	-	ps	(5)
	Hold Time	$T_{lvhd}$	600	-	-	ps	
Vertical Active Display Term	Frame Rate	$F_{r5}$	97	100	103	Hz	(6)
		$F_{r6}$	117	120	123	Hz	
	Total	$T_v$	1115	1125	1135	Th	$T_v=T_{vd}+T_{vb}$
	Display	$T_{vd}$	1080	1080	1080	Th	—
	Blank	$T_{vb}$	35	45	55	Th	—
Horizontal Active Display Term	Total	$T_h$	540	550	575	Tc	$T_h=T_{hd}+T_{hb}$
	Display	$T_{hd}$	480	480	480	Tc	—
	Blank	$T_{hb}$	60	70	95	Tc	—

Note (1) Since the module is operated in DE only mode, Hsync and Vsync input signals should be set to low logic level. Otherwise, this module would operate abnormally.

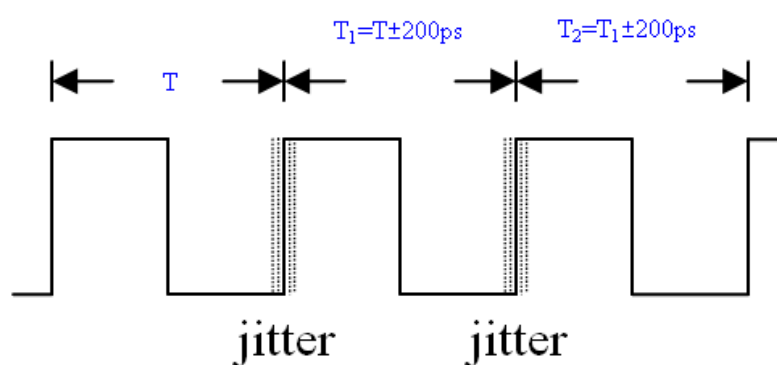
Note (2) Please make sure the range of pixel clock has follow the below equation:

$$F_{clkin}(\max) \geq F_{r6} \times T_v \times T_h$$

$$F_{r5} \times T_v \times T_h \geq F_{clkin}(\min)$$

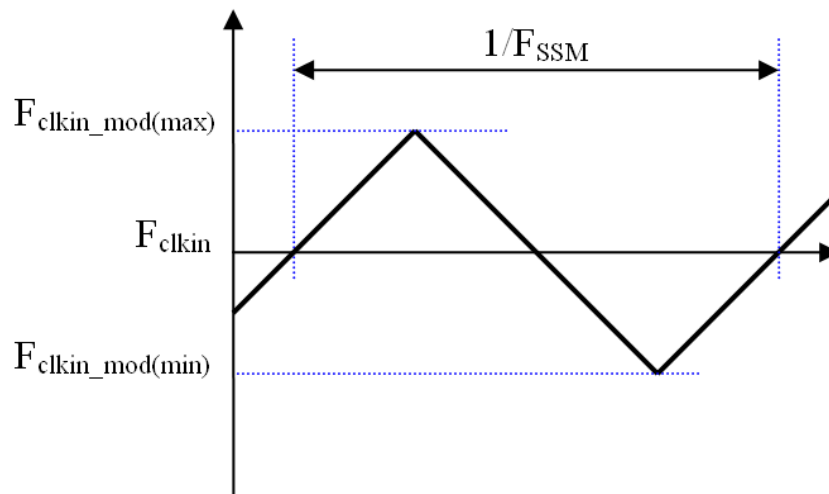
**INPUT SIGNAL TIMING DIAGRAM**

Note (3) The input clock cycle-to-cycle jitter is defined as below figures.  $Trcl = |T_1 - T_2|$



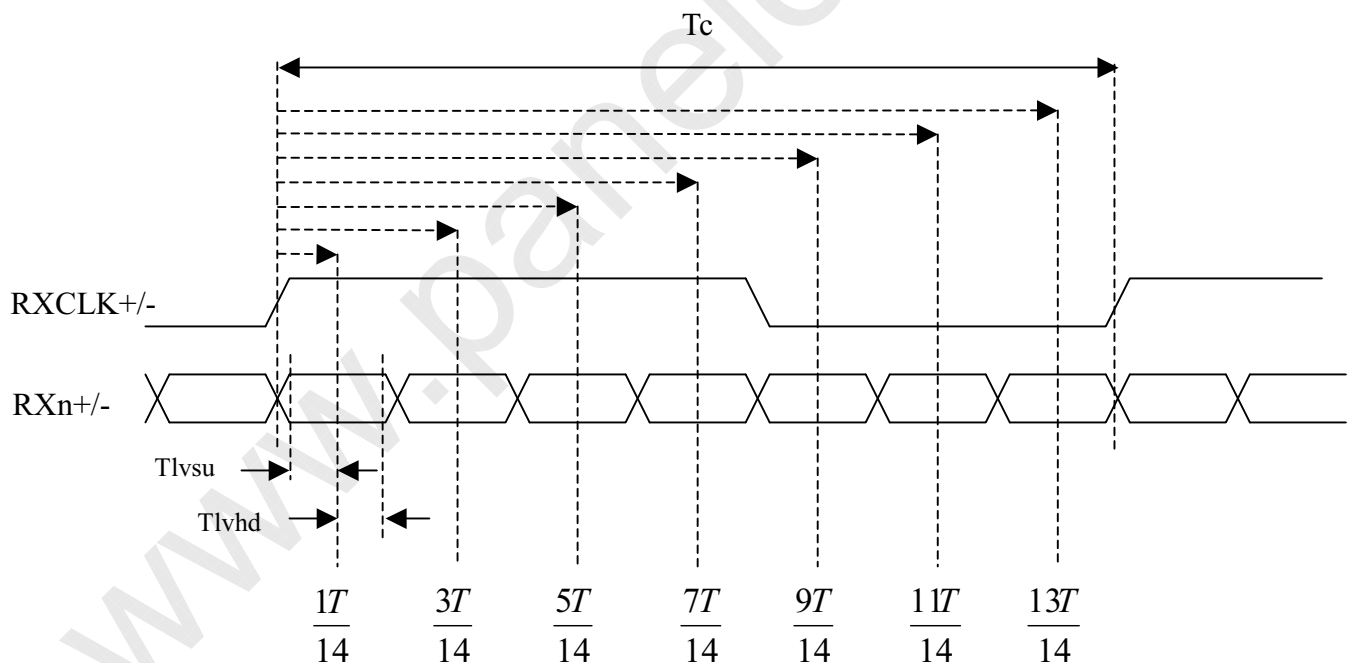


Note (4) The SSCG (Spread spectrum clock generator) is defined as below figures.



Note (5) The LVDS timing diagram and setup/hold time is defined and showing as the following figures.

### LVDS RECEIVER INTERFACE TIMING DIAGRAM

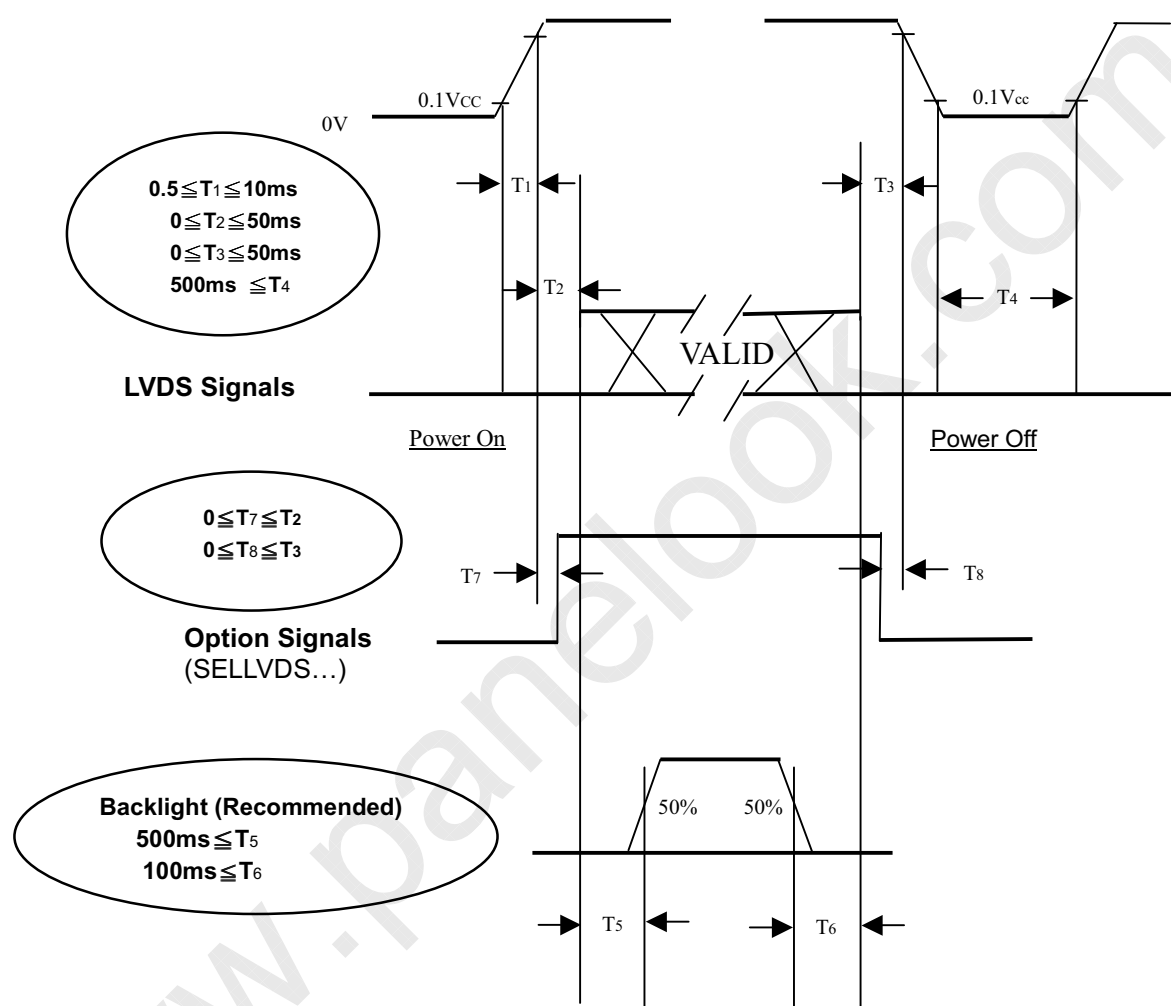


Note (6) (ODSEL) = H/L or open for 100/120Hz frame rate. Please refer to 5.1 for detail information.

## 6.2 POWER ON/OFF SEQUENCE

( $T_a = 25 \pm 2\text{ }^{\circ}\text{C}$ )

To prevent a latch-up or DC operation of LCD module, the power on/off sequence should be as the diagram below.



Note (1) The supply voltage of the external system for the module input should follow the definition of V<sub>CC</sub>.

Note (2) Apply the lamp voltage within the LCD operation range. When the backlight turns on before the LCD operation or the LCD turns off before the backlight turns off, the display may momentarily become abnormal screen.

Note (3) In case of V<sub>CC</sub> is in off level, please keep the level of input signals on the low or high impedance. If T<sub>2</sub> < 0, that maybe cause electrical overstress failure.

Note (4) T<sub>4</sub> should be measured after the module has been fully discharged between power off and on period.

Note (5) Interface signal shall not be kept at high impedance when the power is on.

## 7. OPTICAL CHARACTERISTICS

### 7.1 TEST CONDITIONS

Item	Symbol	Value	Unit
Ambient Temperature	Ta	25±2	°C
Ambient Humidity	Ha	50±10	%RH
Supply Voltage	V <sub>CC</sub>	12	V
Input Signal	According to typical value in "3. ELECTRICAL CHARACTERISTICS"		
Vertical Frame Rate	Fr	120	Hz

### 7.2 OPTICAL SPECIFICATIONS

The relative measurement methods of optical characteristics are shown in 7.2. The following items should be measured under the test conditions described in 7.1 and stable environment shown in Note (7).

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Contrast Ratio		CR		4600	6500	-	-	(2), (4)
Response Time		Gray to gray	$\theta_x=0^\circ, \theta_y=0^\circ$ With CMO Module	-	4.5	9	ms	(5)
Center Transmittance		T%		-	4.6	-	%	(2)
White Variation		$\delta W$		-	-	1.3	-	(2), (7)
Color Chromaticity	Red	Rcx	$\theta_x=0^\circ, \theta_y=0^\circ$ CS-1000T Standard light source "C"	Typ - 0.03	0.647	Typ + 0.03	-	(1),(6)
		Rcy			0.327		-	
	Green	Gcx			0.296		-	
		Gcy			0.600		-	
	Blue	Bcx			0.144		-	
		Bcy			0.083		-	
	White	Wcx			0.335		-	
		Wcy			0.379		-	
Viewing Angle	Horizontal	$\theta_{x+}$	CR≥20 With CMO Module	80	88	-	Deg.	(2), (3)
		$\theta_{x-}$		80	88	-		
	Vertical	$\theta_{y+}$		80	88	-		
		$\theta_{y-}$		80	88	-		

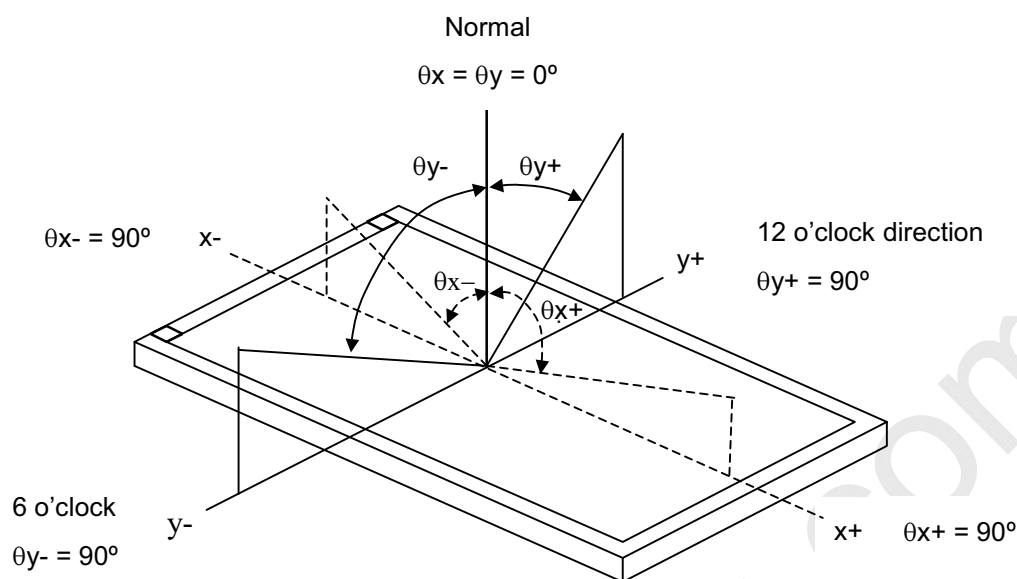
Note (1) Light source is the standard light source "C" which is defined by CIE and driving voltages are based on suitable gamma voltages. The calculating method is as following :

1. Measure Module's and BLU's spectrums. W, R, G, B are with signal input. BLU (for V400H1-LH9) is supplied by CMO.
2. Calculate cell's spectrum.
3. Calculate cell's chromaticity by using the spectrum of standard light source "C"

Note (2) Light source is the BLU which is supplied by CMO and driving voltages are based on suitable gamma voltages.

Note (3) Definition of Viewing Angle ( $\theta_x, \theta_y$ ):

Viewing angles are measured by Autronic Conoscope Cono-80



Note (4) Definition of Contrast Ratio (CR):

The contrast ratio can be calculated by the following expression.

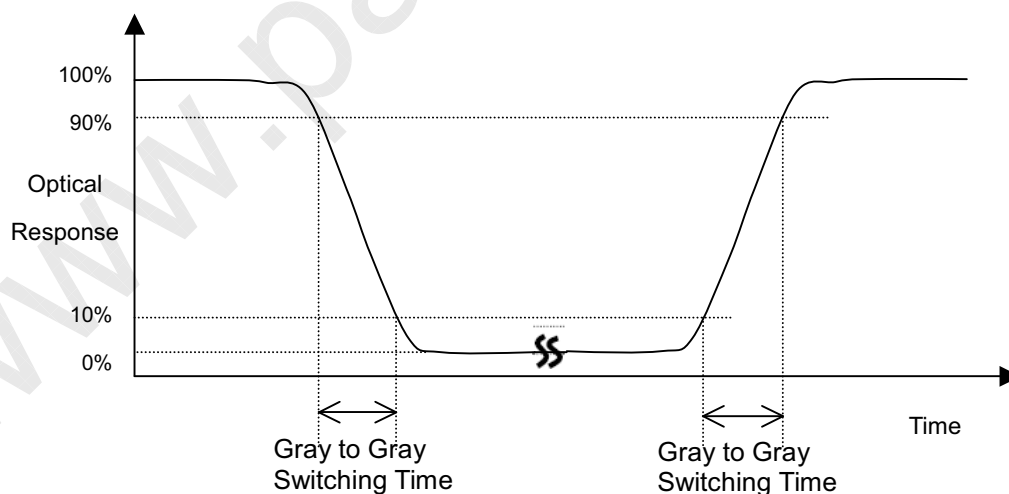
$$\text{Contrast Ratio (CR)} = L_{255} / L_0$$

$L_{255}$ : Luminance of gray level 255

$L_0$ : Luminance of gray level 0

$CR = CR(1)$ , where  $CR(X)$  is corresponding to the Contrast Ratio of the point X at Figure in Note (7).

Note (5) Definition of Gray to Gray Switching Time:

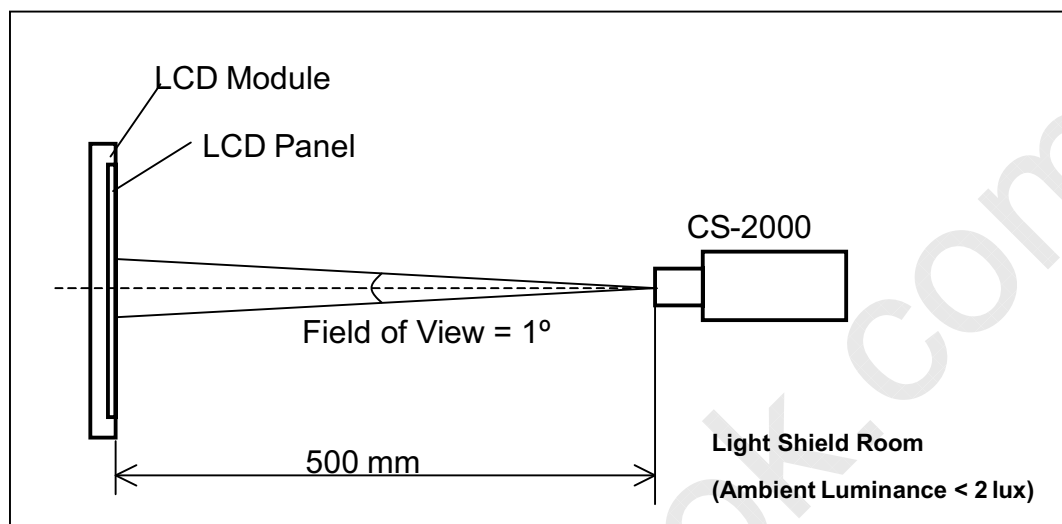


The driving signal means the signal of gray level 0, 63, 127, 191, 255.

Gray to gray average time means the average switching time of gray level 0, 63, 127, 191, 255 to each other.

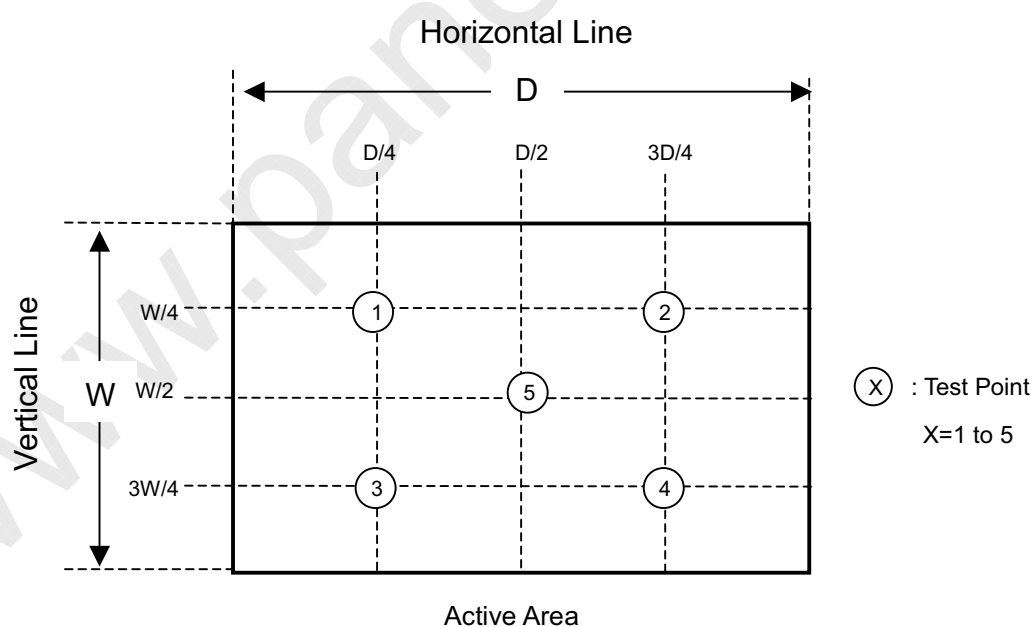
**Note (6) Measurement Setup:**

The LCD module should be stabilized at given temperature for 1 hour to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting backlight for 1 hour in a windless room.

**Note (7) Definition of White Variation ( $\delta W$ ):**

Measure the luminance of gray level 255 at 5 points

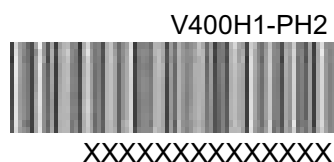
$$\delta W = \text{Maximum} [L(1), L(2), L(3), L(4), L(5)] / \text{Minimum} [L(1), L(2), L(3), L(4), L(5)]$$



## 8. DEFINITION OF LABELS

### 8.1 OPEN CELL LABEL

The barcode nameplate is pasted on each open cell as illustration for CMO internal control.



### 8.2 CARTON LABEL

The barcode nameplate is pasted on each box as illustration, and its definitions are as following explanation

P.O. NO.	_____
Parts ID.	_____
Carton ID.	
	XXXXXXXXXXXXXXXXXX
Quantities	<u>12</u>
Made in Taiwan	

- (a) Model Name: V400H1- PH2
- (b) Carton ID: CMO internal control
- (c) Quantities: 12

## 9. PACKAGING

### 9.1 PACKING SPECIFICATIONS

- (1) 12pcs LCD TV Panels / 1 Box
- (2) Box dimensions: 1108 (L) X 738 (W) X 252 (H)
- (3) Weight: approximately 36 Kg

### 9.2 PACKING METHOD

Figures 9-1 and 9-2 are the packing method

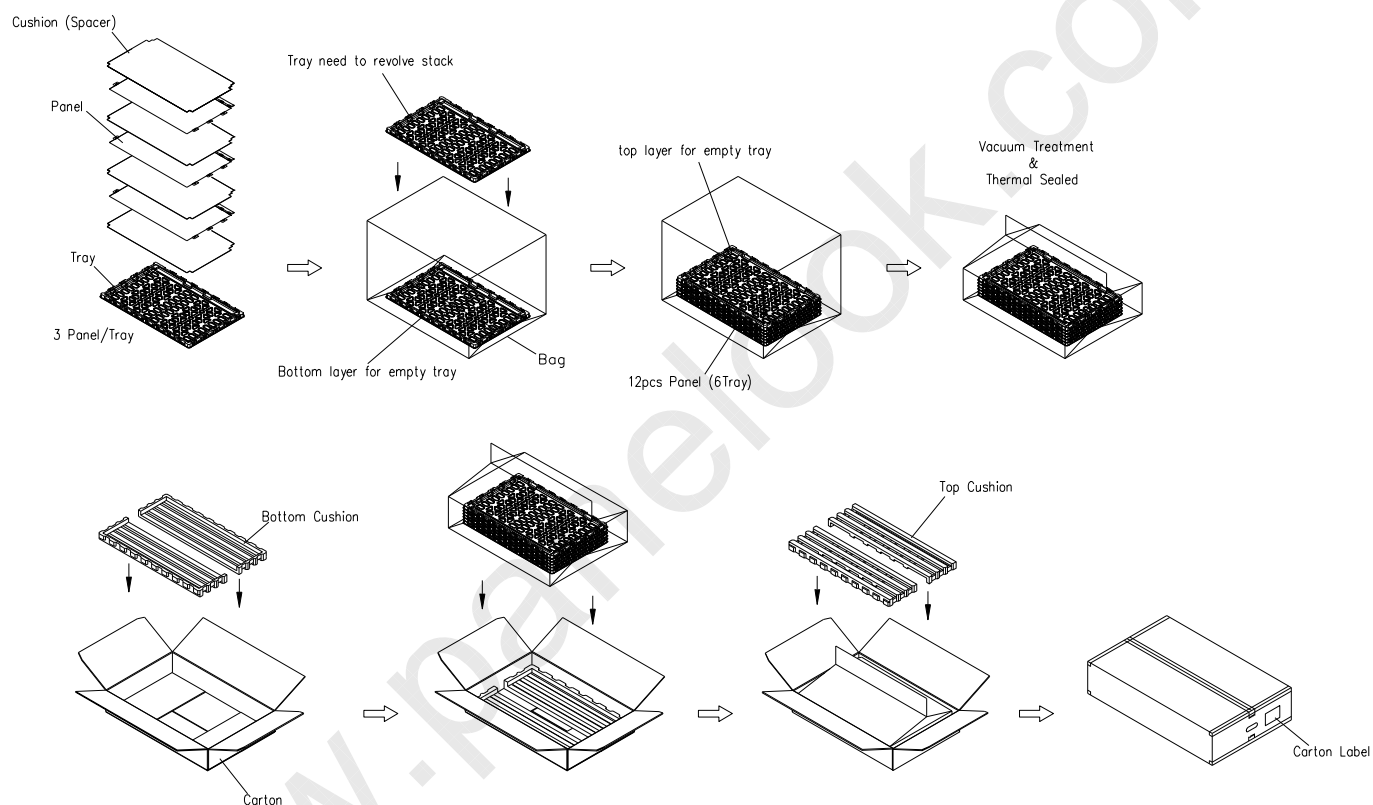


Figure.9-1 packing method



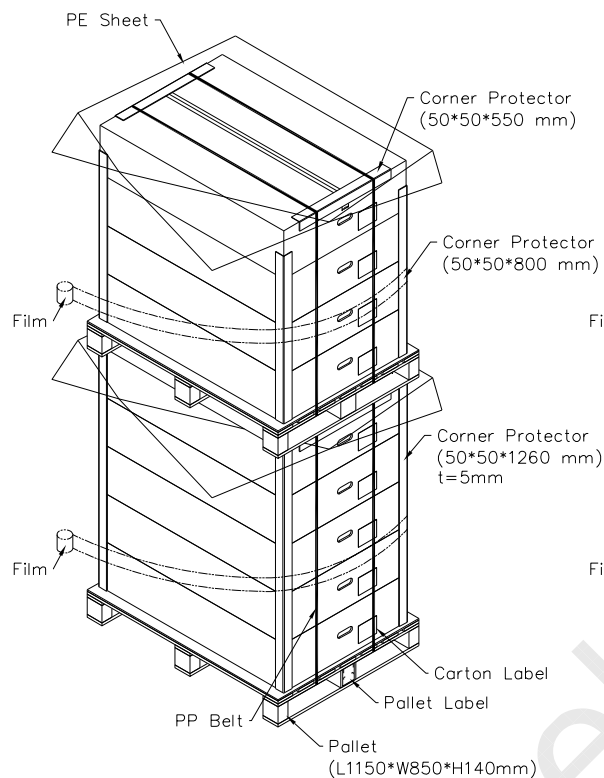
**CHI MEI**  
OPTOELECTRONICS CORP.

Issued Date: Nov. 19, 2009

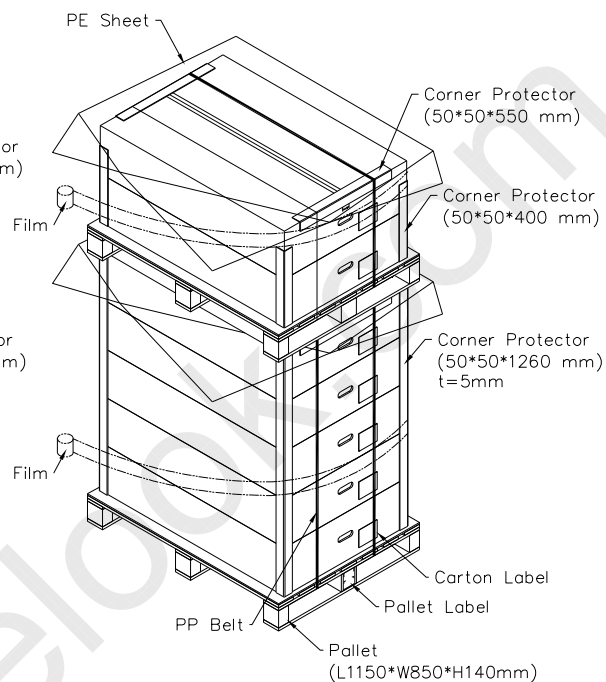
Model No.: V400H1 - PH2

**Approval**

Sea / Land Transportation  
(40ft HQ Container)



Sea / Land Transportation



Air Transportation

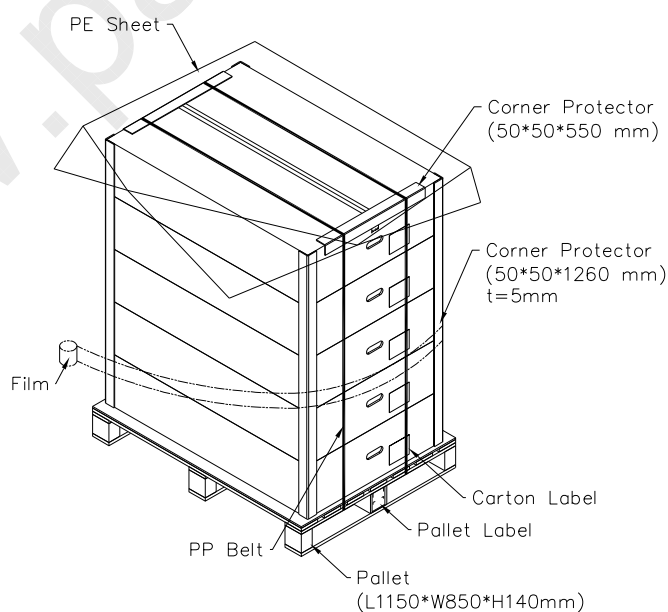


Figure. 9-2 Packing method





## 10. PRECAUTIONS

### 10.1 ASSEMBLY AND HANDLING PRECAUTIONS

- (1) Do not apply rough force such as bending or twisting to the product during assembly.
- (2) To assemble backlight or install module into user's system can be only in clean working areas. The dust and oil may cause electrical short or worsen the polarizer.
- (3) It's not permitted to have pressure or impulse on the module because the LCD panel will be damaged.
- (4) Always follow the correct power sequence when the product is connecting and operating. This can prevent damage to the CMOS LSI chips during latch-up.
- (5) Do not pull the I/F connector in or out while the module is operating.
- (6) Use a soft dry cloth without chemicals for cleaning, because the surface of polarizer is very soft and easily scratched.
- (7) It is dangerous that moisture come into or contacted the product, because moisture may damage the product when it is operating.
- (8) High temperature or humidity may reduce the performance of module. Please store this product within the specified storage conditions.
- (9) When ambient temperature is lower than 10°C may reduce the display quality. For example, the response time will become slowly.

### 10.2 SAFETY PRECAUTIONS

- (1) If the liquid crystal material leaks from the panel, it should be kept away from the eyes or mouth. In case of contact with hands, skin or clothes, it has to be washed away thoroughly with soap.
- (2) After the product's end of life, it is not harmful in case of normal operation and storage.



## 11. MECHANICAL CHARACTERISTICS

